

ATTACHMENT C

**SITE ASSESSMENT REPORT (MILLER BROOKS ENVIRONMENTAL,
INC.)**



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COUNTY FIRE DEPARTMENT
HAZARDOUS MATERIALS

December 11, 2000

Ms. Catherine Richards
San Bernardino County Fire Department, Hazardous Materials Division
385 North Arrowhead Avenue, 2nd Floor
San Bernardino, California 92415-0153

SITE: ONTARIO PIPELINE RELEASE SITE
MILLIKEN AVENUE AT GUASTI ROAD
ONTARIO, CALIFORNIA

RE: REPORT OF SITE ASSESSMENT

Dear Ms. Richards:

Miller Brooks Environmental, Inc. (Miller Brooks) submits the enclosed Site Assessment Report, dated December 6, 2000, regarding site assessment activities associated with a release from a Kinder Morgan Energy Partners, L.P. (KMEP) fuel transmission pipeline located near the intersection of Milliken Avenue and Guasti Road in Ontario, California (see Figure 1).

If you have any questions or concerns regarding this report, please call me at (714) 965-9161.

Sincerely,
MILLER BROOKS ENVIRONMENTAL, INC.

A handwritten signature in cursive script, reading 'Shari A. London'.

Shari A. London, R.G.
Senior Project Geologist

cc: Mr. Mike Pendergrass, KMEP
Ms. Leslie Alford, California Regional Water Quality Control Board, Santa Ana Region
Mr. Harry Patterson, Union Pacific Railroad

162-0011-01

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COUNTY FIRE DEPARTMENT
HAZARDOUS MATERIALS

SITE ASSESSMENT REPORT

ONTARIO PIPELINE RELEASE SITE
MILLIKEN AVENUE AT GUASTI ROAD
ONTARIO, CALIFORNIA

Prepared For:

Mr. Michael Pendergrass
KINDER MORGAN ENERGY PARTNERS, L.P.
1100 Town and Country Road
Orange, California 92868

By:

MILLER BROOKS ENVIRONMENTAL, INC.
18700 Beach Boulevard, Suite 205
Huntington Beach, California 92648
(714) 965-9161

Project Number 01-162-0011-01

December 6, 2000

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1.0 INTRODUCTION

This report presents the results of site assessment activities performed to investigate a release from a Kinder Morgan Energy Partners, L.P. (KMEP) fuel transmission pipeline located near the intersection of Milliken Avenue and Guasti Road in Ontario, California (see Figure 1). Performance of these activities was conducted under the oversight of the San Bernardino County Fire Department, Hazardous Materials Division (SBCFD), in accordance with the work activities described in the Miller Brooks Environmental, Inc. (Miller Brooks) work plan dated June 1, 2000, which was approved by the SBCFD in correspondence dated June 28, 2000. The objective of this assessment was to characterize the extent of petroleum hydrocarbons and methyl tertiary butyl ether (MTBE) identified in soil in the vicinity of the release site.

2.0 SITE DESCRIPTION

The release site is located at the southeastern corner of the intersection of Milliken Avenue and Guasti Road, within the incorporated limits of the City of Ontario, San Bernardino County, California. Active railroad tracks, operated by Union Pacific Railroad (UPRR), are present approximately 40 feet south of and parallel to Guasti Road. Two fuel transmission pipelines owned and operated by KMEP are present in the area, located just north of and parallel to the UPRR railroad tracks (see Figure 2). Industrial parks are located south of the UPRR tracks at the southeastern and southwestern corners of the intersection of Milliken Avenue and Guasti Road, and truck stops (including fueling stations) are located at the northwest and northeast corners of the intersection. Interstate 10 is located adjacent and to the north of the truck stops. Access to the site is provided by a dirt ramp approximately 200 feet east of the intersection of Milliken Avenue and Guasti Road.

3.0 BACKGROUND

3.1 SUMMARY OF PREVIOUS WORK

On April 11, 2000, KMEP personnel requested that Miller Brooks personnel respond to a reported release of petroleum hydrocarbons from the fuel transmission pipeline which runs parallel to the UPRR railroad tracks, near the southeast corner of the intersection of Milliken Avenue and Guasti Road. The source of the release was a block valve which was attached to a 20-inch fuel transmission pipeline. Based on initial observations, KMEP directed limited excavation of the affected material to assess the severity of the release and to perform maintenance on the pipeline. During excavation activities, Miller Brooks conducted air monitoring in compliance with South Coast Air Quality Management District (SCAQMD) Rule 1166 requirements. In addition, Miller Brooks collected soil samples using a hand auger to assess the vertical and lateral extent of petroleum hydrocarbon-affected soil adjacent to the block valve. Based on visual field observations and field hydrocarbon vapor screening, soil samples were obtained for laboratory analysis from hand auger Borings B-1 and B-4, and no soil samples were obtained from Borings B-2 and B-3.

On April 25 and 26, 2000, limited excavation activities were conducted by a subcontractor to KMEP. Soil from an "L" - shaped excavation was removed from two trenches adjacent to the north and west of the valve (see Figures 2 and 3 for excavation limits). Approximately 25 cubic yards of petroleum hydrocarbon-affected soil was removed from the excavation and temporarily stored onsite in labeled, sealed, Department of Transportation (DOT) approved, roll-off bins prior to offsite transport for recycling.

Following completion of soil excavation activities, additional soil samples were collected using a hand auger to further assess the vertical and lateral extent of petroleum hydrocarbon-affected soil. One soil sample (WSW-5) was collected 5 feet west of the excavation at a depth of 5 feet below ground surface (bgs), and

three soil samples (NB-13, SB-15.3, and SBV-20) were collected beneath the base of the excavation at depths of 13, 15.3, and 20 feet bgs, respectively (see Figure 3 for sample locations). The excavation was subsequently backfilled with clean imported fill and non-impacted native soil.

Results of laboratory analysis of soil samples collected during initial assessment activities indicate that petroleum hydrocarbon-affected soil extends to a depth of at least 20 feet bgs adjacent to the release source at the block valve. Maximum concentrations of 12,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPH-G), 3,900 mg/kg total petroleum hydrocarbons as diesel (TPH-D), 21 mg/kg benzene, 350 mg/kg toluene, 150 mg/kg ethylbenzene, 910 mg/kg total xylenes, and 30 mg/kg MTBE were found in soil samples collected adjacent to the release source in Boring B-1 and Sample SBV-20. A summary of laboratory analytical results of initial soil samples is presented in Table 1. Results of laboratory analysis of other soil samples collected during initial assessment activities indicate that petroleum hydrocarbon-affected soil does not appear to be laterally extensive between the ground surface and 15 feet bgs. Based on the findings of the initial investigation activities, a work plan to assess the vertical and lateral extent of affected soil was submitted to, and approved by, the SBCFD.

3.2 ENVIRONMENTAL SETTING

3.2.1 Regional Physiographic Features

The site is located in the Upper Santa Ana River Valley at an average elevation of approximately 970 feet above mean sea level (National Geodetic Vertical Datum [NGVD], 1929). This valley is bounded on the north and east by the San Gabriel and San Bernardino Mountains, on the west by the Puente and San Jose Hills, and on the south by the Jurupa Mountains and unnamed granitic hills. Topography in the site area slopes gently to the south, toward the Santa Ana River. The nearest surface water resource is Day Creek, which is located approximately 1 mile east of the site.

3.2.2 Geologic Conditions

The site is located at the intersection of the west-trending Transverse Range and the northwest-trending Peninsular Range geomorphic provinces of California. The water-bearing formations in the site area consist of non-marine clastic sediments derived from the erosion of the uplifted San Gabriel and San Bernardino Mountains north and northeast of the site, and include river channel and terrace deposits. These erosional sediments were transported and deposited by the flood plain system of the nearby Santa Ana River and its tributaries.

Data gathered during previous site investigations indicate that soil underlying the site consists of medium- to coarse-grained sand and silty sand with some gravelly intervals from the ground surface to a depth of 20 feet bgs (maximum depth of investigation).

3.2.3 Hydrogeology

The site is located in the central portion of the Chino Groundwater Basin, which underlies approximately 230 square miles of alluvial valley. The Chino Basin is bounded on the north by the San Gabriel Mountains, on the east by the Colton-Rialto Fault, on the west by the Chino Hills and Santa Ana Mountains, and on the south by the Santa Ana River. Groundwater in the basin is utilized to support agricultural, municipal, and industrial uses. Water quality in parts of the Chino Basin has been degraded by nitrates due to long-term historical agricultural and dairy uses (Metropolitan Water District, 1987).

Information obtained from the City of Ontario Public Works Agency indicates that the nearest municipal well is located at the northeast corner of Milliken Avenue and Guasti Road. This well is owned by the City of Ontario, and was completed to a depth of 870 feet bgs in 1994, with a perforated interval extending from 400 feet to 860 feet bgs. The driller's log for this well indicates that groundwater was first encountered during drilling at 290 feet bgs.

4.0 SUMMARY OF FIELD ACTIVITIES

4.1 PRE-DRILLING ACTIVITIES

Prior to initiation of drilling activities, a right of entry permit was obtained from Union Pacific Railroad, and soil boring permits were obtained from the San Bernardino County Department of Environmental Health.

On the initial day of field activities, a site safety plan was provided to all workers onsite during the tailgate safety meeting, which was held to inform workers of potential onsite hazards. Prior to drilling at each location, the soil interval from the surface to a depth of approximately 10 feet bgs was cleared using an air knife to prevent damage to the fuel transmission pipelines or possible unidentified subsurface utilities. Copies of the right of entry permit and soil boring permits are included in Appendix A.

4.2 DRILLING, EXCAVATION, AND SOIL SAMPLING

On October 18 and 19, 2000, four soil borings (B-5, B-6, B-7, and B-8) were drilled at the site to assess the vertical and lateral extent of petroleum hydrocarbons and MTBE previously found in soil beneath the southeast portion of the gasoline USTs (see Figure 4 for the soil boring locations). The soil borings were drilled using a hollow-stem auger drilling rig as follows: 1) Boring B-5 was drilled to a depth of 70.5 feet bgs, approximately 3 feet north and east of the source of the release; 2) Boring B-6 was drilled to a depth of 50.5 feet bgs, approximately 20 feet east of the release source; 3) Boring B-7 was drilled to a depth of 50.5 feet bgs, approximately 20 feet north of the release source; and 4) Boring B-8 was drilled to a depth of 40.5 feet bgs, approximately 20 feet west of the release source. Soil samples were collected at 5-foot depth intervals for soil description, field hydrocarbon vapor screening, and laboratory analysis.

On October 20, 2000, approximately 2.5 cubic yards of soil were excavated using an air knife from the areas immediately adjacent to the south and east sides of the valve and underlying fuel transmission pipeline. The soil was excavated to a depth of approximately 6 feet bgs, and soil samples were collected from the base and sidewalls of the excavation to document the petroleum hydrocarbon concentrations in soil remaining in place in this portion of the excavation. Excavation soil samples were collected as follows: 1) Sample SSW-1-4.5 was collected at a depth of 4.5 feet bgs from the southern sidewall of the excavation; 2) Sample ESW-1-4 was collected at a depth of 4 feet bgs from the eastern sidewall of the excavation, and 3) Sample EB-1-6 was collected at a depth of 6 feet bgs from the excavation bottom. See Figure 3 for the sample locations. Based on the proximity of the railroad tracks, no further excavation could be performed. A description of general field procedures during drilling and soil sampling activities is included with the boring logs in Appendix A.

Soil and limited decontamination rinse water generated during drilling, excavation, and sampling activities were temporarily stored onsite in a labeled, DOT-approved, roll-off soil bin, which was transported to the SFPP, L.P. bulk fuel storage facility in Rialto, California, pending disposal profiling and offsite transport for soil recycling at the TPS Technologies, Inc. facility in Adelanto, California. A copy of the non-hazardous waste manifest for the soil disposal will be forwarded under separate cover upon receipt.

5.0 LABORATORY ANALYSIS

Soil samples were submitted to a state-certified laboratory and analyzed for TPH-G, TPH-D, and total petroleum hydrocarbons as jet fuel (TPH-J) using EPA Method 8015, and for VOCs, including benzene, toluene, ethylbenzene, and total xylenes (BTEX), MTBE, tertiary amyl methyl ether (TAME), diisopropyl ether (DIPE), ethyl tertiary butyl ether (EtBE), and tertiary butyl alcohol (TBA) using EPA Method 8260B. The soil samples exhibiting the highest TPH and VOC concentrations (Samples B-5-12.25, B-5-15.25, and EB-1-6) were further analyzed for semi-volatile organic compounds (SVOCs) using EPA Method 8270C. Results of laboratory analysis of soil samples collected from the confirmation borings are presented in Table 2. Copies of the official laboratory reports and chain of custody records are included in Appendix B.

6.0 FINDINGS

Sediments observed in the subsurface generally consist of interbedded fine- to medium-grained sand, silty fine- to medium-grained sand, and silt from the ground surface to 70.5 feet bgs (maximum depth of investigation). No groundwater was observed during drilling activities.

Results of field hydrocarbon vapor screening during drilling using a photoionization detector (PID) indicated the following:

- Detectable organic vapor concentrations were found in Boring B-5 at concentrations ranging from a maximum concentration beyond the instrument maximum concentration of 1,999 parts per million (ppm) to a low concentration of 1.4 ppm. In general, organic vapor concentrations were highest at depths of 12.25 and 15.25 feet bgs, and were observed to attenuate with depth (74.9 ppm at 35 feet bgs, and 14.1 ppm at 45.25 feet bgs). Organic vapor concentrations in soil samples collected from Boring B-5 between the depths of 50 and 70 feet bgs ranged in concentration from 1.2 to 4.1 ppm.
- Detectable organic vapor concentrations were found in Boring B-6 between the depths of 12.25 and 20.25 feet bgs, at concentrations ranging from 1.4 to 1.9 ppm. No detectable organic vapors were found in the samples collected from Boring B-6 between the depths of 25 and 50.5 feet bgs.
- Detectable organic vapor concentrations were found in Boring B-7 between the depths of 12.25 and 50.25 feet bgs, at concentrations ranging from 0.4 to 6.8 ppm.
- Detectable organic vapor concentrations were found in Boring B-8 between the depths of 12.25 and 40.5 feet bgs, at concentrations ranging from 0.7 to 9.5 ppm.

Results of laboratory analysis of soil samples collected during this investigation indicated the following:

- Soil samples collected from Boring B-5, which was located adjacent to the source of the release, contained detectable concentrations of petroleum hydrocarbons. Soil samples collected at 12.25 and 15.25 feet bgs contained the highest concentrations of petroleum hydrocarbons (maximum 11,000 mg/kg TPH-G, 540 mg/kg TPH-D, no detectable TPH-J, 20 mg/kg benzene, 500 mg/kg toluene, 250 mg/kg ethylbenzene, 1,600 mg/kg total xylenes, 75 mg/kg MTBE, and 88 mg/kg naphthalene; no other fuel oxygenates, VOCs, or SVOCs were detected). Petroleum hydrocarbon concentrations attenuated rapidly with depth; the soil sample collected at 20.25 feet bgs contained no detectable TPH-G, TPH-D, TPH-J, or benzene, 0.0081 mg/kg toluene, no detectable ethylbenzene, 0.009 mg/kg total xylenes, 0.21 mg/kg MTBE, and 1.7 mg/kg TBA. The soil samples collected from Boring B-5 between the depths of 25.25 and 70.25 contained no detectable TPH-G, TPH-D, TPH-J, VOCs, or SVOCs, with the exception of

2.0 mg/kg TPH-G found in the soil sample collected at a depth of 35 feet bgs. However, detectable concentrations of MTBE were found in the soil samples collected at 25.25 feet bgs (0.0075 mg/kg), 35 feet bgs (3.1 mg/kg), 55.25 feet bgs (0.006 mg/kg), 65.25 feet bgs (0.085 mg/kg) and 70.25 feet bgs (0.051 mg/kg).

- Soil samples collected from Boring B-6, which was located approximately 20 feet east of the release source, contained no detectable TPH-G, TPH-D, TPH-J, BTEX, MTBE, or other fuel oxygenates and VOCs, with the exception of 0.010 mg/kg MTBE found in the soil sample collected at a depth of 30.25 feet bgs, and 0.0076 mg/kg MTBE found in the soil sample collected at a depth of 35.25 feet bgs.
- Soil samples collected from Boring B-7, which was located approximately 20 feet north of the release source, contained no detectable TPH-G, TPH-D, TPH-J, BTEX, MTBE, other fuel oxygenates, or VOC concentrations, with the exception of 0.0057 mg/kg MTBE found in the soil sample collected at a depth of 25.25 feet bgs.
- Soil samples collected from Boring B-8, which was located approximately 20 feet west of the release source, contained no detectable TPH-G, TPH-D, TPH-J, BTEX, MTBE, or other fuel oxygenates and VOCs, with the exception of 0.130 mg/kg MTBE found in the soil sample collected at a depth of 35.25 feet bgs, and 0.019 mg/kg MTBE found in the soil sample collected at a depth of 40.25 feet bgs.
- Soil samples collected from the base and sidewalls of the additional excavation adjacent to the south and east of the release source (Samples ESW-1-4, SSW-1-4.5, and SB-1-6) contained maximum concentrations of 6,000 mg/kg TPH-G, 210 mg/kg TPH-D, no detectable TPH-J, 2.7 mg/kg benzene, 180 mg/kg toluene, 94 mg/kg ethylbenzene, 650 mg/kg total xylenes, and 1.6 mg/kg MTBE, no other detectable VOCs or fuel oxygenates, 44 mg/kg naphthalene, and no other detectable SVOCs.

7.0 CONCLUSIONS

Results of initial site assessment activities indicated that the maximum concentrations of petroleum hydrocarbons were found at depths between 11 and 14 feet bgs in Borings B-1 and B-4, adjacent to the release source. During the subsequent investigation, soil samples were collected from Boring B-5, which was located within 1 to 3 feet of Borings B-1 and B-4, to assess the vertical extent of affected soil in the most highly impacted area. Results of laboratory analysis of soil samples collected from Boring B-5 indicated that concentrations of petroleum hydrocarbons in soil attenuated rapidly with depth. With the exception of 0.006, 0.085, and 0.051 mg/kg MTBE found in the soil samples collected at depths of 55.25, 65.25, and 70.25 feet bgs, respectively, no detectable petroleum hydrocarbons, BTEX, MTBE, VOCs, or other fuel oxygenates were found in Boring B-5 beneath a depth of 35 feet bgs. Results of soil samples from Borings B-6, B-7, and B-8, which were collected to evaluate the lateral extent of affected soil, indicated that the petroleum hydrocarbon-affected soil is of limited lateral extent. Based on the established depth to groundwater of 290 feet bgs, the deepest detected petroleum hydrocarbons in soil beneath the release site are approximately 220 feet above groundwater. Based on the depth to groundwater, and the results of site investigations conducted to date, it is the opinion of Miller Brooks that the vertical and lateral extent of petroleum hydrocarbon-affected soil has been adequately assessed.

During the initial response activities and subsequent site assessment activities, approximately 30 cubic yards of petroleum hydrocarbon-affected soil was removed, beginning at the ground surface and extending to depths of 6 to 8 feet bgs. The residual volume of petroleum hydrocarbon-affected soil remaining in place is approximately 160 cubic yards (based on impacted soil extending from 6 to 25 feet bgs over an area of 15 square feet around the release source). Based on the removal of the most highly impacted soil near the ground surface, and based on the distance of 220 feet between the deepest affected soil and groundwater, it is the opinion of Miller Brooks that residual petroleum hydrocarbons in soil at the site do not pose a threat to human health or the environment, and that no further site assessment or remediation activities are warranted.

8.0 STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

The conclusions presented herein are based solely upon the agreed upon scope of work outlined in this report. Miller Brooks makes no warranties or guarantees as to the accuracy or completeness of information provided or compiled by others. It is possible that information exists beyond the scope of this investigation. Additional information, which was not found or available to Miller Brooks at the time of writing this report, may result in modification of the conclusions presented. This report is not a legal opinion. The services performed by Miller Brooks have been conducted in a manner consistent with the level of care ordinarily exercised by members of our profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

This investigation was supervised or personally conducted by the licensed professional whose signature and license number appear below.



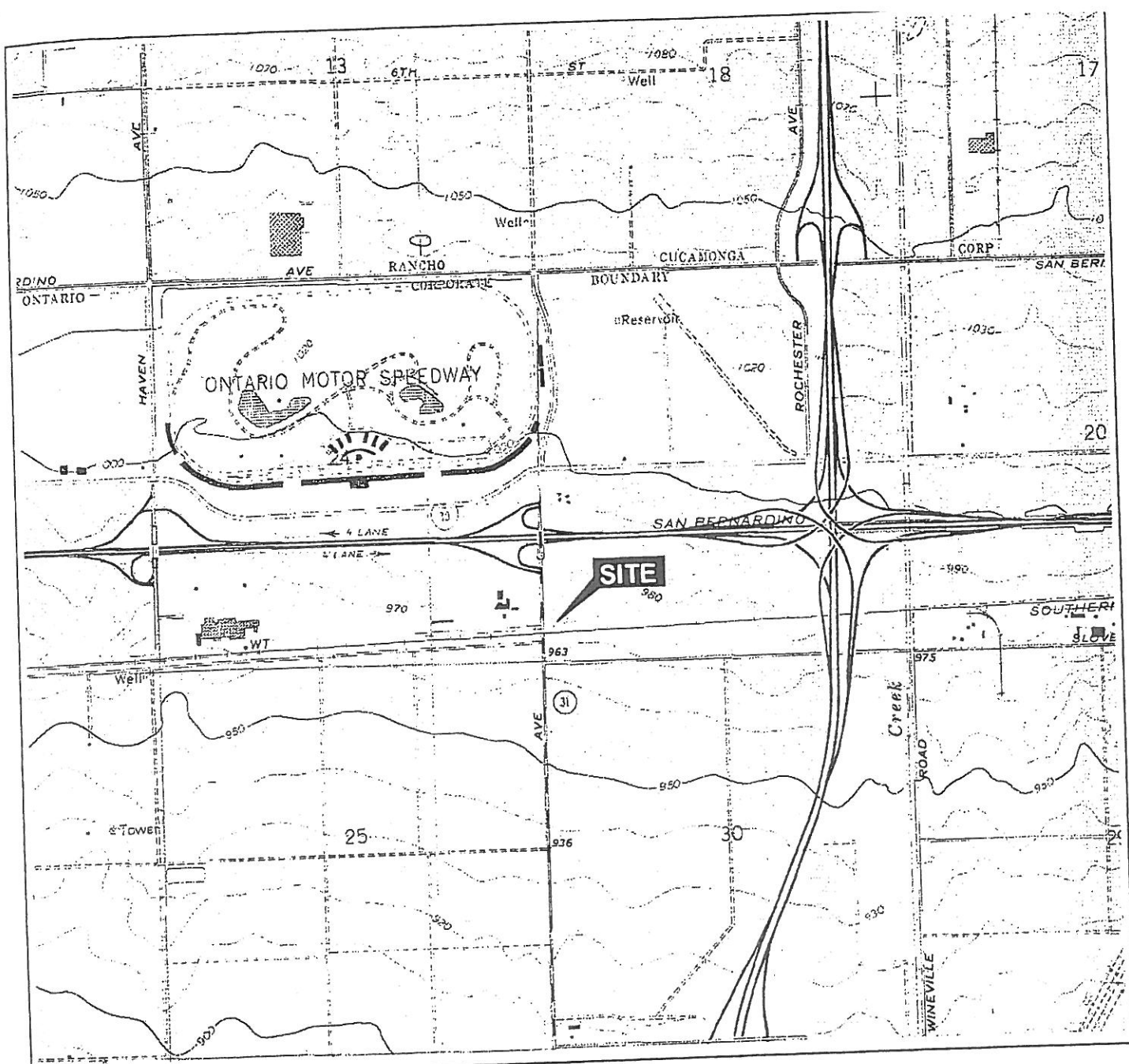
Shari A. London, R.G.
Senior Project Geologist



Jeffrey R. Maxwell, R.G.
Senior Geologist

9.0 REFERENCES

- California Division of Mines and Geology, 1977, Geologic Map of California, Scale 1:750,000.
- California Regional Water Quality Control Board, Santa Ana Region (CRWQCB), Region 8, 1995, Water Quality Control Plan – Santa Ana River Basin (Region 8).
- City of Ontario Public Works Agency, 2000, personal communication, Fernando E. Cobos, May 31, 2000.
- Metropolitan Water District, 1987, Groundwater Quality and Its Impact on Water Supply in the Metropolitan Water District Service Area, Report No. 969, January.
- Miller Brooks Environmental, Inc., 2000, Work Plan to Conduct Site Assessment Activities, Ontario Pipeline Release Site, Milliken Avenue at Guasti Road, Ontario, California, June 1.



Notes: Base map from United States Geological Survey (USGS),
7.5 minute series (topographic), Guasti Quadrangle.

0 2000 4000
FEET



KINDER MORGAN ENERGY PARTNERS, L.P.
ONTARIO PIPELINE RELEASE LOCATION
MILLIKEN AVENUE AT GUASTI ROAD
ONTARIO, CALIFORNIA

MILLER BROOKS
Environmental, Inc.

VICINITY MAP

PROJECT NUMBER 01-162-0011-01

FIGURE 1

GUASTI ROAD

Sidewalk

MILLIKEN AVENUE

Toe of Slope
(approx.)

Concrete
Drain Outlet

Limits of
Excavation

16-inch diameter Fuel Transmission Pipeline

20-inch diameter Fuel Transmission Pipeline

Valve
Protective
Enclosure

NO WORK ALLOWED IN AREAS WITHIN 25 FEET
OF THE CENTERLINE OF RAILROAD TRACKS
PER UNION PACIFIC REQUIREMENTS

RAILROAD TRACKS



MILLER BROOKS
Environmental, Inc.

KINDER MORGAN ENERGY PARTNERS, L.P.
ONTARIO PIPELINE RELEASE LOCATION
MILLIKEN AVENUE AT GUASTI ROAD
ONTARIO, CALIFORNIA



SCALE (FEET)

SITE PLAN

PROJECT NUMBER 01-162-0011-01

FIGURE 2

GUASTI ROAD

Sidewalk

Toe of Slope
(approx.)

MILLIKEN AVENUE

Concrete
Drain Outlet

Limits of Initial
Excavation

B-8

B-6

B-5

Valve

Protective
Enclosure

Area of Additional
Excavation

NO WORK ALLOWED IN AREAS WITHIN 25 FEET
OF THE CENTERLINE OF RAILROAD TRACKS
PER UNION PACIFIC REQUIREMENTS

LEGEND

Hollow-stem Auger
Soil Boring Location

RAILROAD TRACKS



MILLER BROOKS
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KINDER MORGAN ENERGY PARTNERS, L.P.
ONTARIO PIPELINE RELEASE LOCATION
MILLIKEN AVENUE AT GUASTI ROAD
ONTARIO, CALIFORNIA

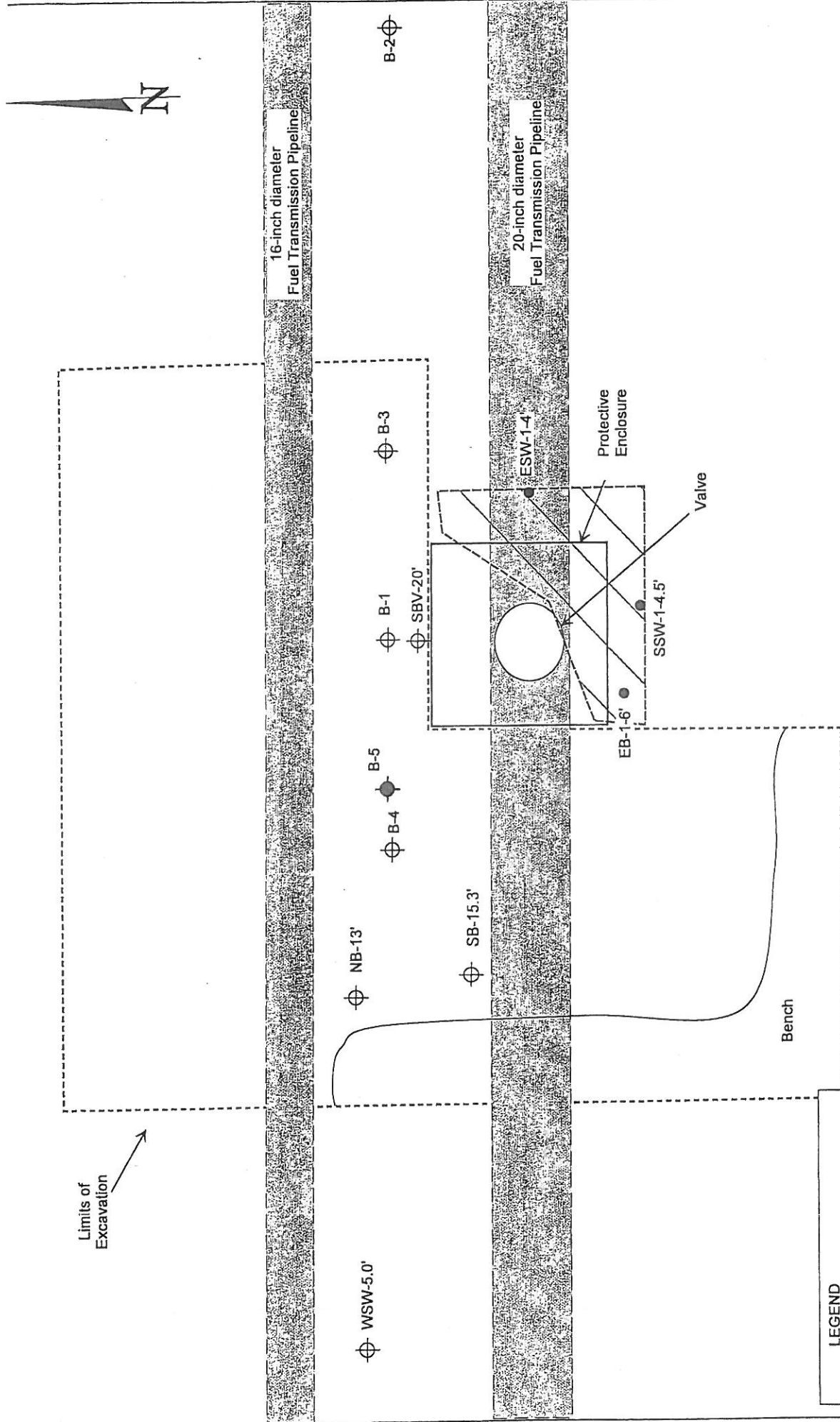
**HOLLOW-STEM AUGER
BORING LOCATIONS**



SCALE (FEET)

PROJECT NUMBER 01-162-0011-01

FIGURE 4



LEGEND

- ⊕ Hand-Auger Boring Location
- ⊕ Hollow-stem Auger Boring Location
- Soil Sample Location



SCALE (FEET)



KINDER MORGAN ENERGY PARTNERS, L.P.
 ONTARIO PIPELINE RELEASE LOCATION
 MILLIKEN AVENUE AT GUASTI ROAD
 ONTARIO, CALIFORNIA

EXCAVATION SAMPLING
 LOCATION PLAN

PROJECT NUMBER 01-162-0011-01

FIGURE 3